

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Withdrawn): A pyrochemical reprocessing method for spent nuclear fuel for melting the spent nuclear fuel in a molten salt placed in a crucible and by depositing the nuclear fuel, whereby:

the crucible is heated by induction heating, a cooling medium is supplied to cool down, and a molten salt layer is maintained by keeping balance between the heating and the cooling, and a solidified salt layer is formed on wall surface in the crucible.

2. (Withdrawn): A pyrochemical reprocessing method according to claim 1, wherein a fluid except water is used as the cooling medium.

3. (Withdrawn): A pyrochemical reprocessing method according to claim 1 or 2, wherein auxiliary heating members are arranged in the crucible to promote temperature increase of the salt.

4. (Currently Amended): An induction heating system to be used in a pyrochemical reprocessing method for melting a spent nuclear fuel in a molten salt placed in a crucible and for depositing the nuclear fuel, wherein said induction heating

system comprises means for induction heating, ~~and~~ cooling means for cooling by supplying a cooling medium to the crucible, and auxiliary heating means for auxiliary heating, comprising a heating member arranged in the crucible to promote temperature increase of the molten salt.

5. (Currently Amended): An induction heating system according to claim 4, wherein said crucible is ~~designed in~~ formed in a shape of one of the group consisting of a cylindrical shape, an annular shape, a planar shape or ~~in~~ a shape formed by combining these shapes.

6. (Canceled)

7. (Original): An induction heating system according to claim 4, wherein a fluid except water is used as the cooling medium.

8. (New): An induction heating system according to claim 4, wherein said crucible is pyro-graphite.

9. (New): An induction heating system according to claim 8, wherein said pyro-graphite crucible is an anode in an electrolysis and depositing process.